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Case Report

Osteochondroma of shoulder originating from glenoid: A rare cause of impingement syndrome

Eyup Cagatay Zengin, Muhittin Sener, Hakan Ertem
Department of Orthopaedics and Traumatology, Izmir Katip Celebi University, Izmir, Turkey

Abstract

The aim of this case report is to guide the treatment when orthopedic surgeons encountered with scapular osteochondroma. Subacromial impingement syndrome (SAIS) is one of the most frequent causes of shoulder discomfort. Osteochondroma-related subacromial impingement syndrome is rarely reported in the literature. In this case report, we describe the treatment of a 19-year-old female patient with a solitary osteochondroma who presented with pain and restricted movement in the shoulder region. Direct radiography indicated that a bone density mass had almost completely filled the subacromial region. The unique aspect of this report was the origin of the exostosis. Although osteochondromas originating from the posterior superior glenoid are uncommon, they can cause SAIS. Removal of the mechanical irritation with arthroscopic or open surgical techniques can reduce pain and facilitate recovery of shoulder function.

Keywords

Osteochondroma; Shoulder; Impingement

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Corresponding Author: Eyup Cagatay Zengin, Department of Orthopaedics and Traumatology, Izmir Katip Celebi University, Basin Sitesi 35160, Izmir, Turkey.
GSM: +905052522836 E-Mail: zengincagatay@hotmail.com
ORCID ID: 0000-0002-9843-790X

Introduction

Subacromial impingement syndrome (SAIS) is one of the most frequent causes of shoulder discomfort. Patients typically complain of pain in the shoulder that spreads to the arm, particularly during overhead movements [1]. The majority of SAIS cases develop from intrinsic causes, primarily due to reduced vascularization and blood circulation in the rotator cuff. The remaining cases are the result of extrinsic causes, often from narrowing in the subacromial region by the morphological structure of the acromion [2]. Osteochondroma-related SAIS is rarely reported in the literature [1–7], and the condition is not commonly seen by orthopedic surgeons in clinical practice. Although surgery is typically the first course of treatment for these patients, this decision is a difficult one. Most osteochondromas with scapular localization are positioned on the hard-to-reach ventral surface of the scapula. To the best of our knowledge, there is no report in the literature of a case of osteochondroma originating from the posterior superior glenoid leading to SAIS. This case report describes the treatment of a 19-year-old female patient with a solitary osteochondroma who presented with pain and restricted movement in the shoulder region.

Case Report

A 19-year old female presented with left shoulder pain that had been ongoing for approximately one year and restricted movement that had increased in the previous six months. The patient had received various medical treatments and physiotherapy at another center, but there had been no improvement. There was no recent history of trauma, and radiographs had not been taken. There was no indication of night sweats, no significant recent weight loss, and no family history of cancer. The patient was 1.68m tall and weighed 65 kg, with a body mass index of 23. A physical examination revealed no redness, temperature increase, or visible deformity in the shoulder. The neurovascular examination was normal. Active abduction of the shoulder was approximately 70˚, flexion was 90˚, external rotation was 30˚, and internal rotation was < 10˚. The Neer Impingement Sign and Hawkins-Kennedy tests were positive. There were no findings of instability in the shoulder, and the patient had no similar complaints in any other area. There were no other significant findings in the physical examination.

Direct radiography indicated that a bone density mass had almost completely filled the subacromial region (Figure 1). Computed tomography (CT) and magnetic resonance imaging (MRI) scans were taken. The subacromial mass measured 40 x 25 x 30 mm, consistent with a single wide, pedicled osteochondroma with a cartilage cap that was approximately 6mm thick. (Figure 2,3). The osteochondroma protruded into the subacromial area at the continuation of the medulla and cortex with the posterior superior glenoid. No similar findings were identified in any other region. A needle biopsy was taken from the mass. The pathology report was consistent with an osteochondroma, and an excision was planned. Given the large size of the mass, arthroscopic removal was ruled out. Instead, a mini-open transacromial approach from the posterolateral was taken. A vertical incision was made starting 2cm inferomedial to the posterior corner of the acromion. After passing through the skin and subcutaneous tissues, the deltoid fibers were reached. To increase the field of view, the deltoid fibers were raised as an osteoperiosteal flap and suspended. It was not possible to remove the large mass in a single piece. After first cleaning of the subacromial area, the pedicle was excised over the glenoid toward the medial.

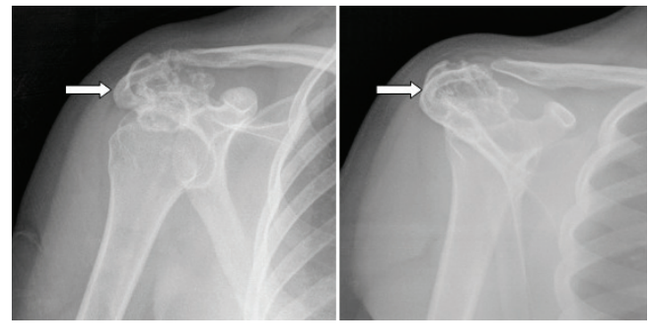

Figure 1. Anterior-posterior radiograph and scapular Y-view of the left shoulder joint demonstrating the osteochondroma protruding into the subacromial space (arrow).

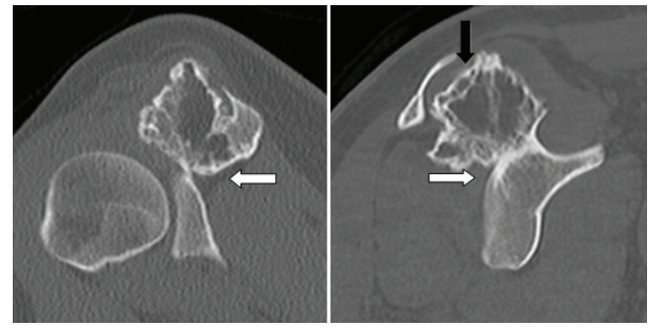

Figure 2. Coronal and sagittal CT images showing osteochondroma arising from gleoid (white arrow) and protruding into the subacromial space (black arrow).

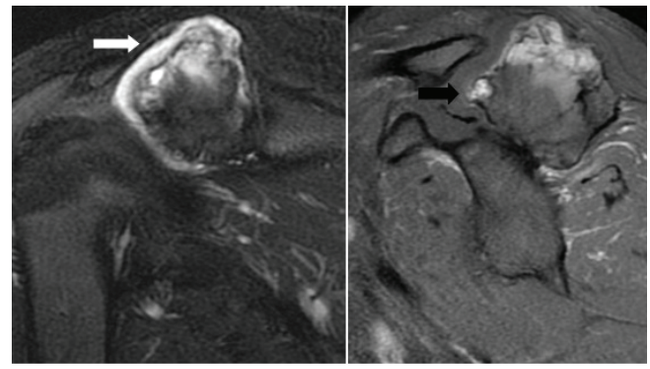

Figure 3. Coronal and sagittal fat-suppressed MRI image showing a thin layer of the cartilage outlines the osseous projection(white arrow) and osteochondroma arising from posterior gleoniod (black arrow).

On postoperative day one, elbow and wrist exercises were started on a 30˚ abduction pillow, and shoulder exercises were gradually applied to the patient. On the third postoperative day, there was a significant reduction in pain, and within the same period, the patient regained the full range of shoulder joint movement. During the follow-up at postoperative 19 months, no recurrence was seen.

The written informed consent was obtained from the patient for publishing this medical data.

Discussion

Osteochondroma, also known as exostosis, is the most common type of bone tumor, comprising 10%–15% of all bone neoplasms and 20%–50% of all benign bone tumors [7]. Scapular involvement varies between 3% and 46% [7]. Osteochondromas comprise 14.4% of all scapular tumors and 49% of benign

scapular tumors, making this the most frequently seen type of benign scapular tumor [7. Osteochondroma lesions are asymptomatic until the occurrence of painful bursitis, cosmetic deformity, mechanical irritation during joint movement, neurovascular pressure, or malignant transformation to chondrosarcoma [6]. Most osteochondromas occur as a solitary lesion. In the rarer cases of multiple lesions, the condition is called multiple hereditary exostoses (MHE) or diaphyseal aclasis [1]. Patients with a solitary osteochondroma lesion are seen four to five times more often than those with MHE [1]. Malignant transformation is seen in 1%–2% of solitary osteochondromas and in 5%–25% of MHE [6]. This transformation is typically characterized by increased pain and osteochondroma growth [6]. Lesions located around the scapula have a greater risk of malignant transformation than those in other areas [1]. Before surgery is undertaken to remove an osteochondroma, it must be confirmed that the lesion is benign. If there is any chance of malignancy, a biopsy must be performed. In the current patient, a biopsy excluded the possibility that the mass had undergone a malignant transformation.

Patients with osteochondroma located in the subacromial area usually present with pain and restricted movement in the shoulder joint. The literature reports seven cases of osteochondroma leading to impingement where the patient's long-term shoulder pain lasted from six months to 18 years after medical treatment was first applied [1–7]. In two of these cases, the impingement, which likely developed from mechanical irritation, worsened to a ruptured rotator cuff [2,3]. Out of these seven osteochondroma-impingement cases, two were identified as MHE; the remainder occurred as a solitary lesion, as in the current case [1,5]. The osteochondroma in one of the seven cases originated in the spine of the scapula [1]. In the remaining six cases, the tumors were located on the inferior of the acromion [2–7]. To the best of our knowledge, the current case is the only reported instance of an osteochondroma leading to impingement that originated from the posterior superior glenoid.

If symptomatic treatment of scapular osteochondroma is not successful, excision must be performed [2]. Although open surgical excision has generally been preferred in the literature, there are reported cases of arthroscopy-assisted excision. In the osteochondroma cases discussed above, arthroscopy-assisted excision was used on three patients [1,4,6], while open surgical excision was performed on the rest [2,3,5,7]. Arthroscopy-assisted techniques are more useful in masses with smaller dimensions. There is no precise size limit for this technique; it depends on the location of the mass. Clement applied arthroscopic excision to a mass located on the spina scapulae [1] and Thomas and Lu to an osteochondroma with inferior acromion localization [4,6]. In the current case, open excision was preferred due to the size and location of the mass. Osteochondroma recurrence happens rarely, at rates as low as 2%, and is generally associated with insufficient excision [8]. Therefore, it is important to remove the entire mass along with the pedicle. None of the literature cases discussed above reported recurrence.

Conclusion

Although osteochondromas originating from the posterior superior glenoid are uncommon, they can cause SAIS. Removal of the mechanical irritation with arthroscopic or open surgical techniques can reduce pain and facilitate recovery of shoulder function.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

References

1. Clement ND, McBirnie JM, Porter DE. Subacromial impingement syndrome in a patient with hereditary multiple exostosis: a case report. BMC Sports Sci Med Rehabil. 2013; 5: 20.
2. Tahta M, Zengin EC, Bulut T, Aslan C, Sener M. An uncommon cause of rotator cuff rupture: Subacromial osteochondroma. Ege Journal of Medicine. 2017; 56: 209-11.
3. Citlak A, Akgün U, Bulut T, Aslan C, Mete BD, Sener M. Subacromial osteochondroma: A rare cause of impingement syndrome. Int J Surg Case Rep. 2015; 6: 126-8.
4. Thomas S, Srivastav S, Agarwal S, Singh H, Shete S, Bhargav M. Arthroscopic excision of subacromial osteochondroma causing impingement of shoulder in a patient with diaphyseal achalasia. J Clin Orthop Trauma. 2013; 4: 40–2.
5. Craig EV. Subacromial impingement syndrome in hereditary multiple exostoses. Clin Orthop Relat Res. 1986; 209: 182-4.
6. Lu MT, Abboud JA. Subacromial osteochondroma. Orthopedics. 2011; 34: 581-3.
7. Frost NL, Parada SA, Manoso MW, Arrington E, Benfanti P. Scapular osteochondromas treated with surgical excision. Orthopedics. 2010; 33: 804.
8. Flugstad NA, Sanger JR, Hackbarth DA. Pseudo-winging of the scapula caused by scapular osteochondroma: review of literature and case report. Hand (N Y) 2015; 10: 353-6.

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